



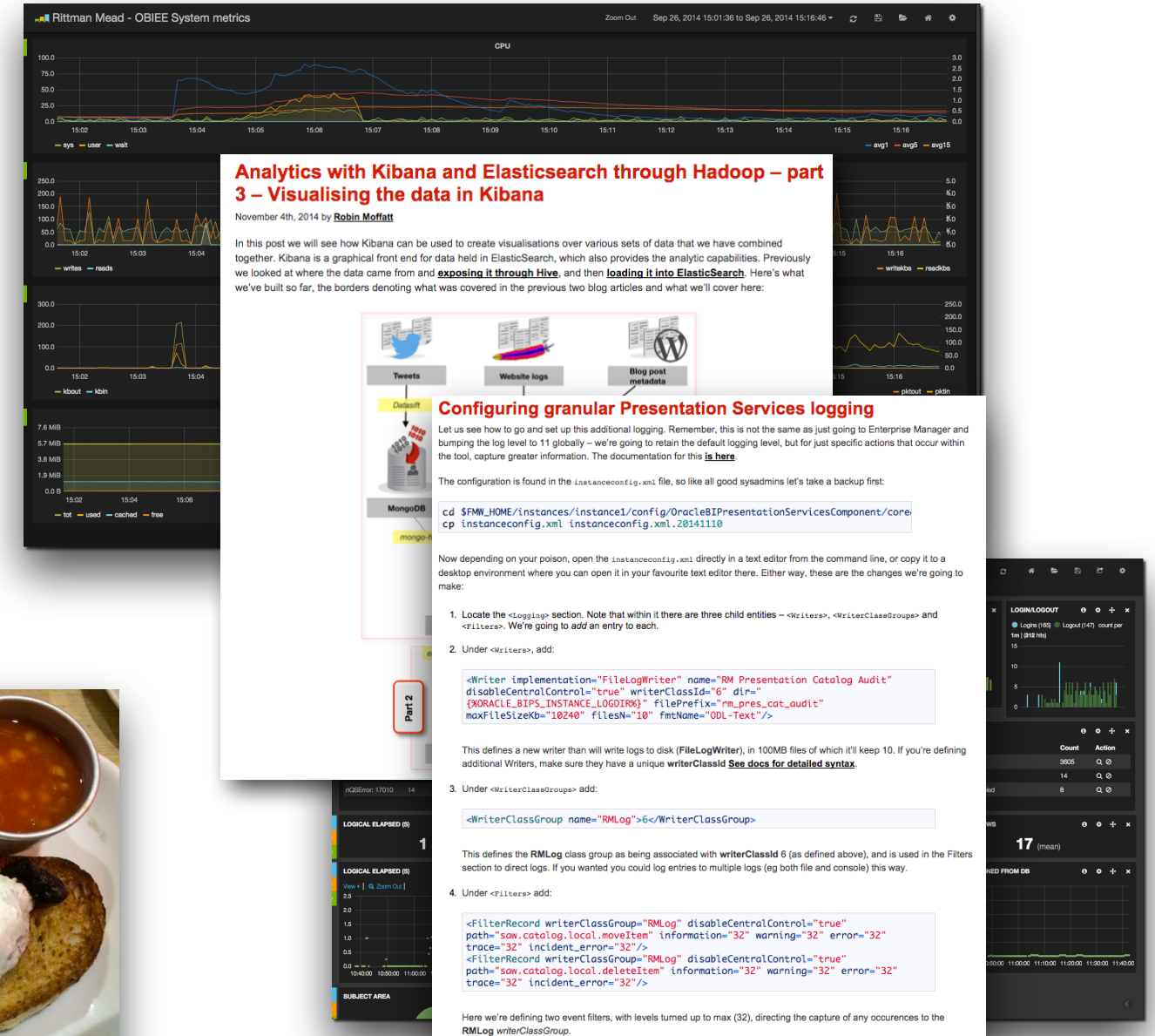
Source Control and Concurrent Development for OBIEE

Robin Moffatt, Principal Consultant
Rittman Mead

Riga Dev Day, 22 January 2015

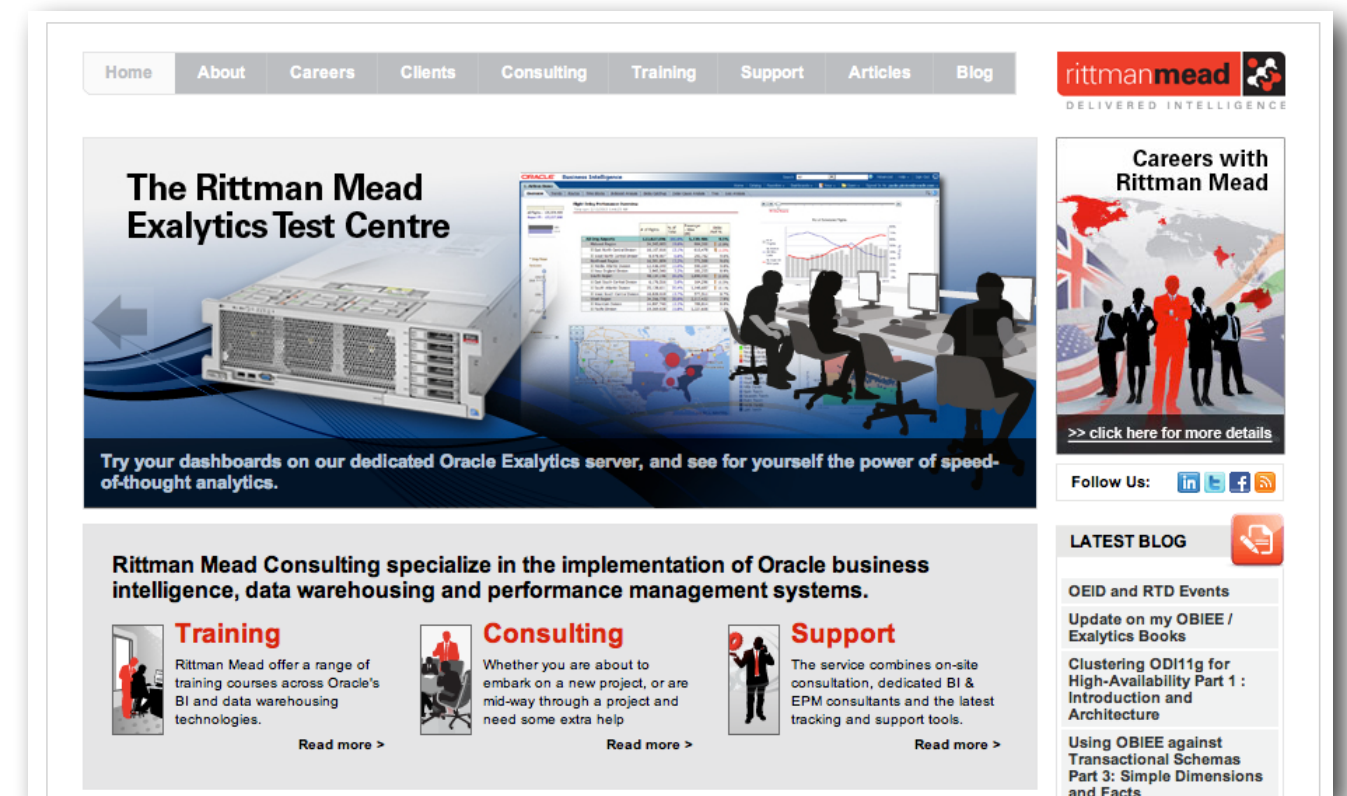
About Me

- Principal Consultant with Rittman Mead
 - Previously OBIEE/DW developer at large UK retailer
 - Previously SQL Server DBA, Business Objects, DB2, COBOL....
- Newly minted Oracle ACE!
- Frequent blogger for Rittman Mead : <http://ritt.md/rmoff>
- Twitter: @rmoff
- IRC: rmoff / #obihackers / freenode



About Rittman Mead

- Oracle BI and DW Gold partner
- *Winner of five UKOUG Partner of the Year awards in 2013 and 2014 - including BI*
- World leading specialist partner for technical excellence, solutions delivery and innovation in Oracle BI
- Approximately 80 consultants worldwide
- All expert in Oracle BI and DW
- Offices in US (Atlanta), Europe, Australia and India
- Skills in broad range of supporting Oracle tools:
 - ▶ OBIEE, OBIA
 - ▶ ODIEE
 - ▶ Essbase, Oracle OLAP
 - ▶ GoldenGate
 - ▶ Endeca



OBIEE Software Development Life Cycle (SDLC)

- A successful OBIEE implementation is more than just data modelling and analytics.
- Software Development LifeCycle (SDLC) is of great importance to all involved in OBIEE:
 - ▶ Developers
 - ▶ Release Managers
 - ▶ Testing
 - ▶ Project & Delivery Management
- Two key areas of importance:
 - ▶ Source Control
 - ▶ Concurrent Development



Source Control in OBIEE

(Source Control == Revision Control == Version Control)

Without Source Control We Have Chaos!

 <u>S</u> end	To...	#BI-DEVS
	<u>C</u> c...	
	<u>S</u> ubject	What's going on in Test?
	<u>A</u> ttached	

All – anyone know which RPD got deployed to Test this morning? It doesn't look like the one that I sent to jim.
Thanks. Finbar.

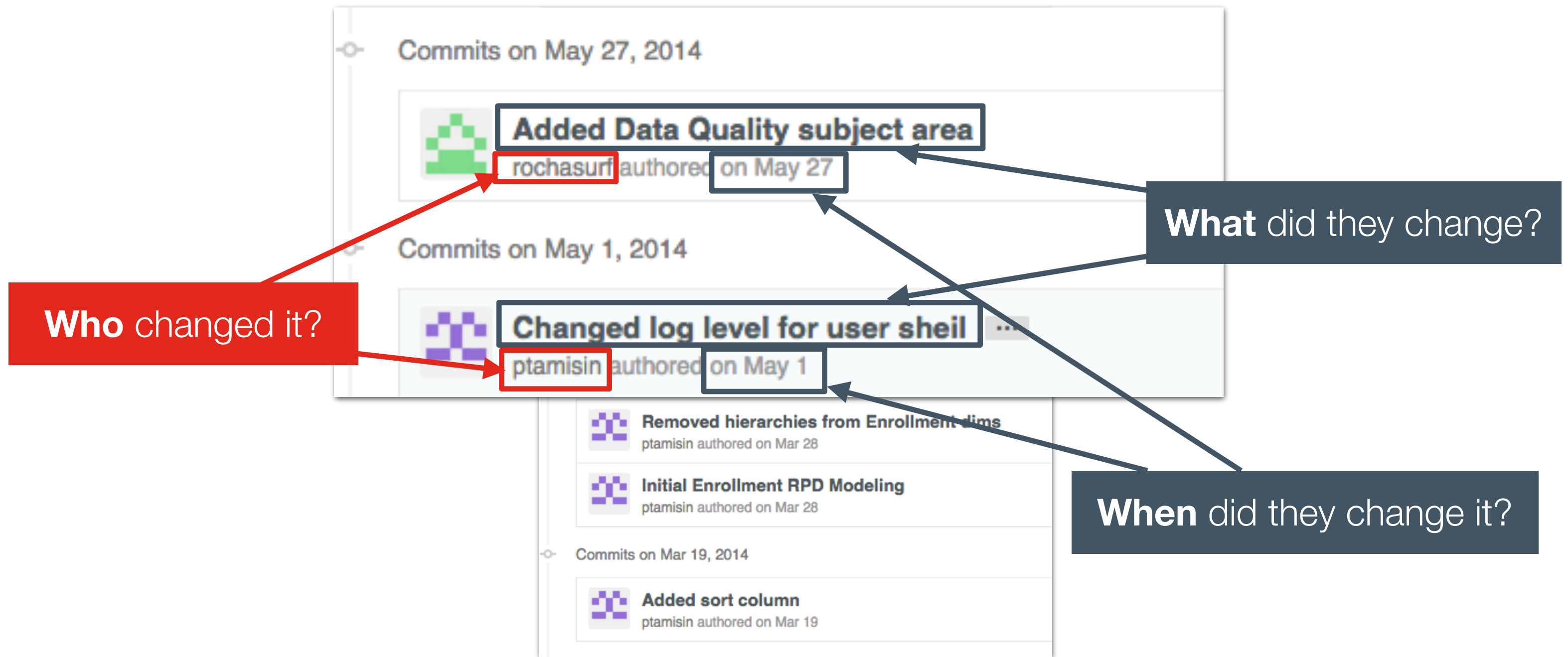
- newUAT20130307.rpd
- newUAT20130607.rpd
- newUAT20130823.rpd
- newUAT20130823a.rpd
- NewUat20140701.rpd
- Original.rpd
- PRD20140710.rpd

I need to do a release to Prod, but where's the RPD?
Don't think I've got access to your J:\ drive.
Thanks
Roger

Why Do We Need Source Control?

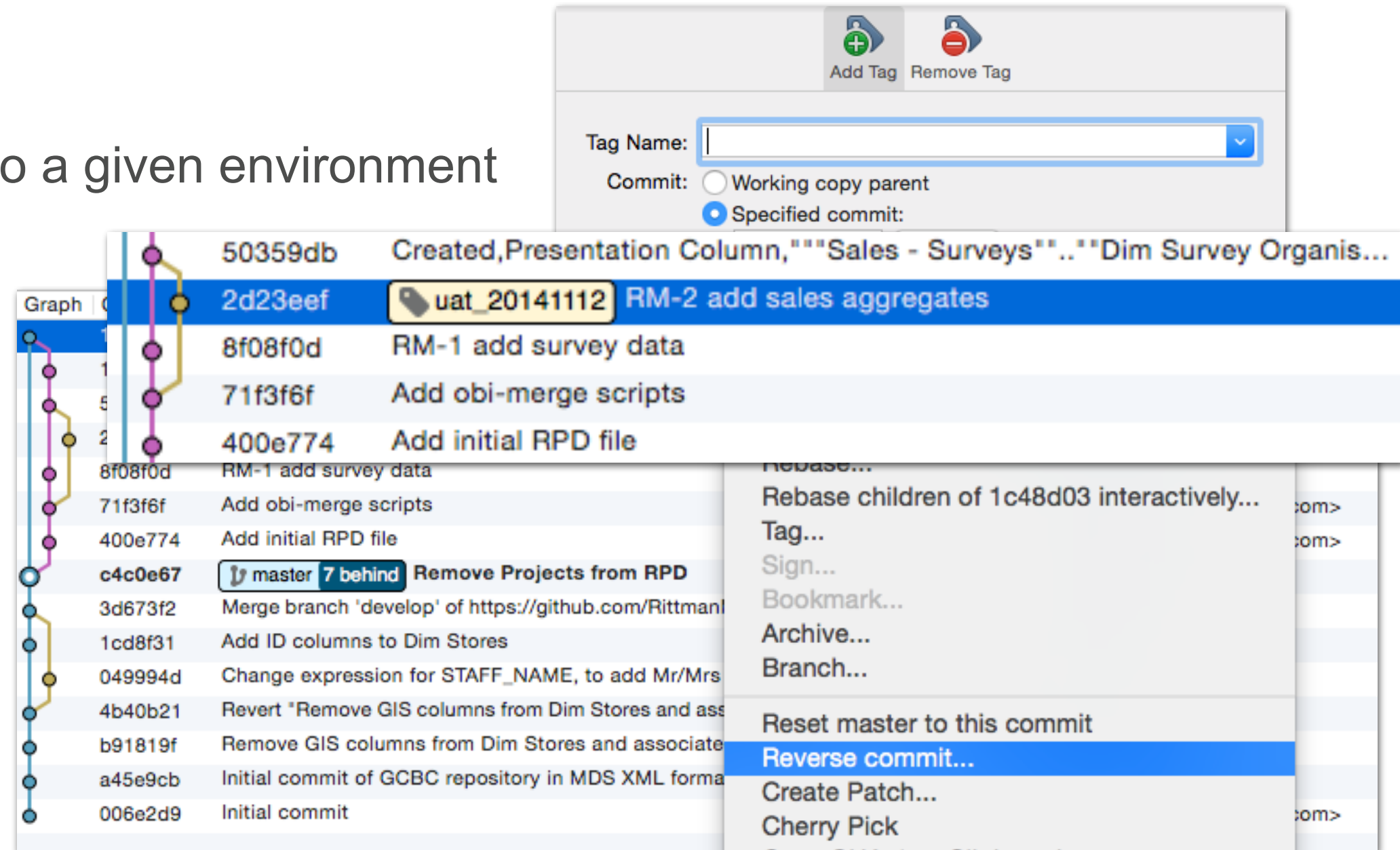
- **Every** mature OBIEE development should be using Source Control!
 - ▶ Reduce risk when deploying
 - ▶ Improve ease of maintenance and development
 - ▶ Pre-requisite to concurrent development method (discussed later)

Why Do We Need Source Control?



Why Do We Need Source Control?

- Label (tag) points in the code line
 - ▶ Mark code bundles for release to a given environment
 - Audit what went where when
 - ▶ Revert to “known-good” point



Isn't Source Control Scary and Complicated?

- No!
- Well... maybe a bit
- But you don't really have a choice



Without Source Control We Have Chaos!

 <u>S</u> end	To...	#BI-DEVS
	<u>C</u> c...	
	<u>S</u> ubject	What's going on in Test?
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- newUAT20130307.rpd
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- NewUat20140701.rpd
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Don't think I've got access to your J:\ drive.
Thanks
Roger

Source Control is Mandatory

- Any mature OBIEE development should be using Source Control
- One developer or one hundred, still relevant



What Are the Tools for Source Control in OBIEE?

- Familiarity with the tool and organisational acceptance is key
- Two common ones (but plenty of others)
 - ▶ git
 - ▶ Subversion (SVN)
- If you are wanting to do concurrent development, **git** is excellent
 - ▶ Modern technology
 - ▶ Distributed



Just Use Source Control Already



OBIEE Artefacts in Source Control

- OBIEE primarily stores its objects in binary form
 - ▶ *We'll talk about MDS XML later*
- Source Control tools and their merge workflows are designed around **plaintext** objects
- Therefore Source Control becomes a snapshot / point-in-time capture of your OBIEE environment

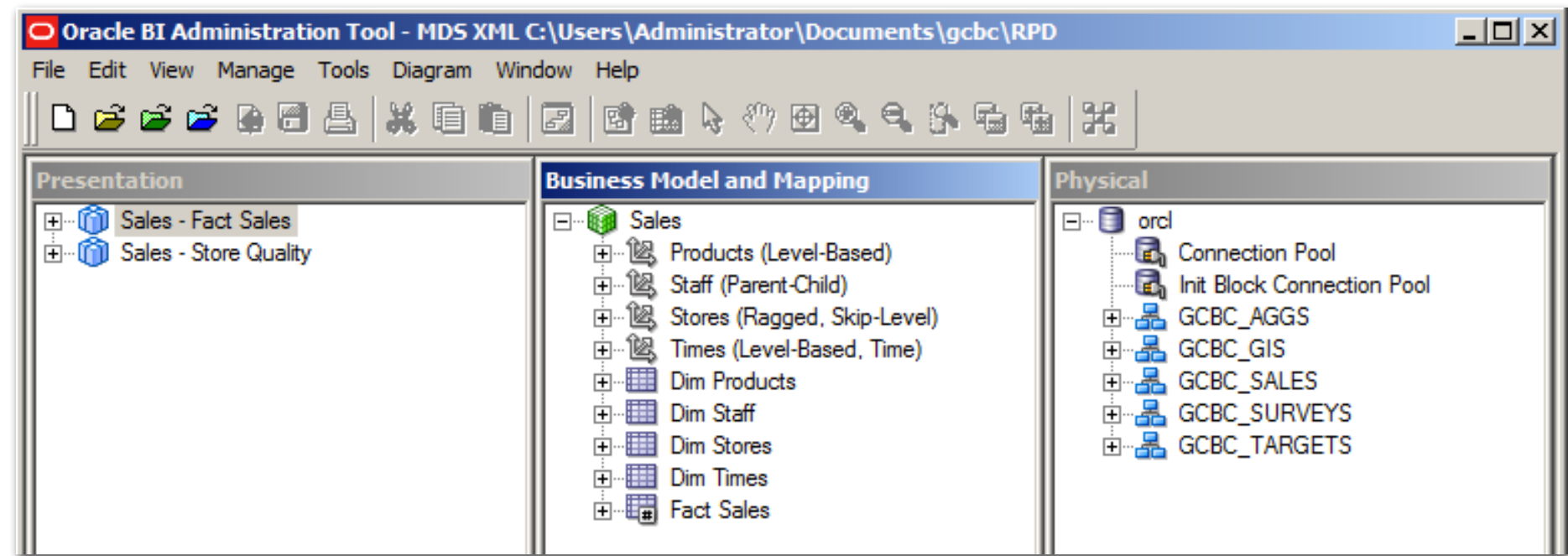
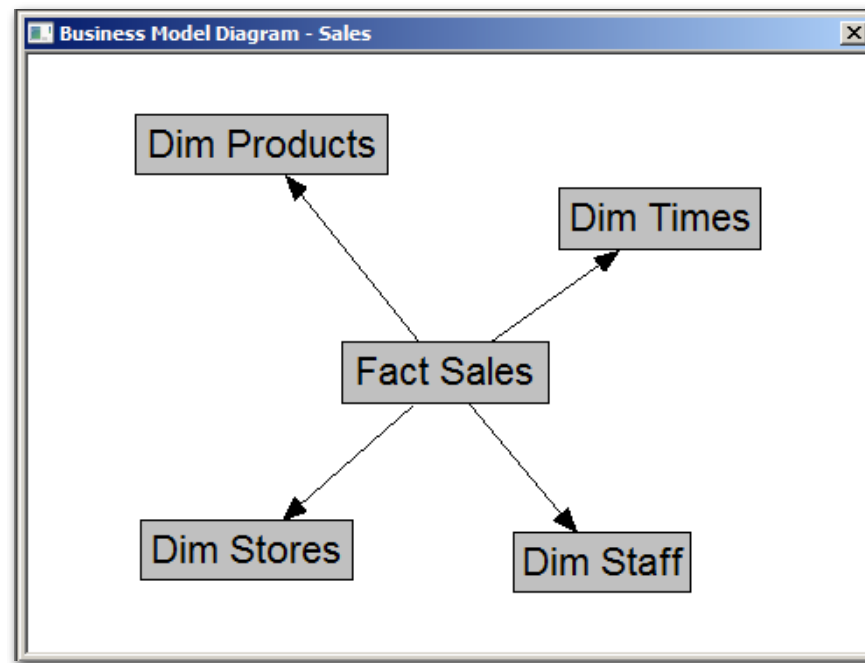
RPD
Presentation Catalog
Security
Component configuration
Custom skin/style
ETL, DB schemas, etc



Concurrent RPD Development in OBIEE

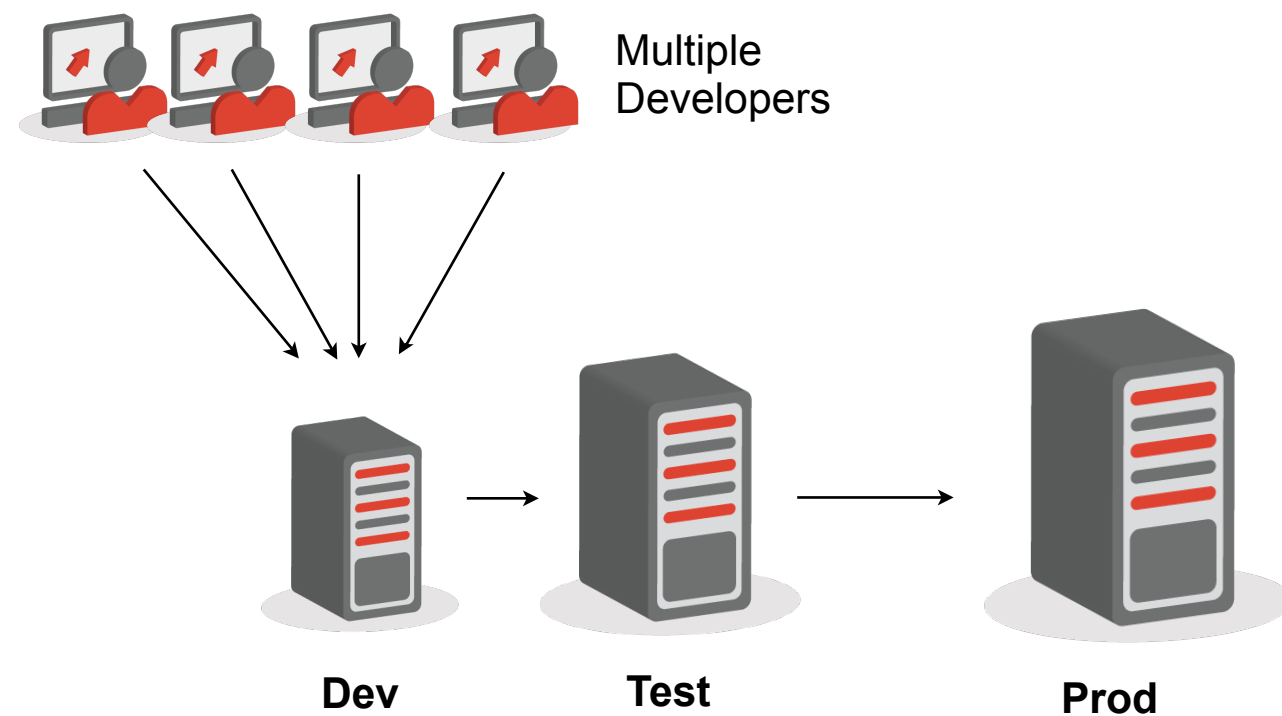
The RPD

- At the core of OBIEE is the RPD - the brains of the operation!
- A metadata model that generates SQL requests at runtime from user report requests
- **Most concurrent OBIEE development problems centre around the RPD**



The Problem With Serial RPD Development

- It doesn't scale well
- Releases are complicated and risky



Feature Driven Development

- Development is broken up into “Features”, such as:
 - New logical column
 - Add a dimension
 - Fix a bug
- Great for flexible (Agile/agile) approach to delivery
 - Features only released when ready
 - Features don't block others
 - Selectively release features



OBIEE Development Nirvana

- RPD development rate that **scales with your team**
- **Feature-Driven Development**
- **Full source control integration**
- Because of the necessary framework, makes **Continuous Integration** very possible



The Harsh Reality

- OBIEE does not natively support concurrent development integrated with source control
 - ▶ *And it never will until Oracle re-engineer OBIEE and/or the RPD storage format*
- All options require a **defined process to be followed** and associated **training** for staff
 - There is no perfect software-based solution that will **force ‘bad’ developers to be good**
- You will always need a “**Dungeon Master**” to oversee and track developments, manage conflicts, and support developers.



The Harsh Reality

- There are four options to consider for concurrent development in OBIEE
 - ▶ Online editing
 - ▶ MUD
 - ▶ Source control + MDS XML RPD
 - ▶ Source control + Binary RPD
- **They all suck!**
 - **This is 2015, not 1995!**
- **Which sucks the least?...**
 - ▶ What can we do to mitigate the suckiness?



Online RPD edits

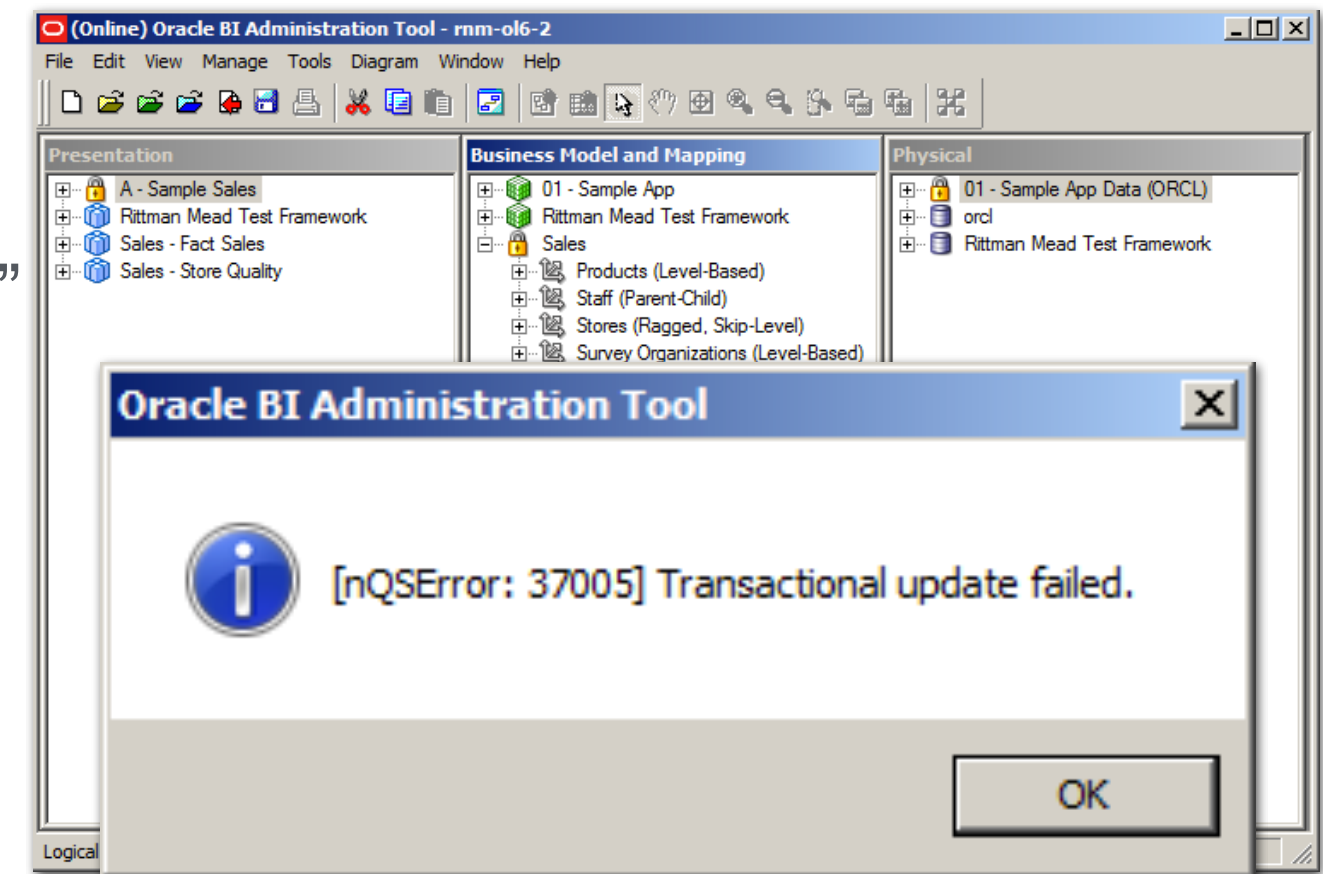
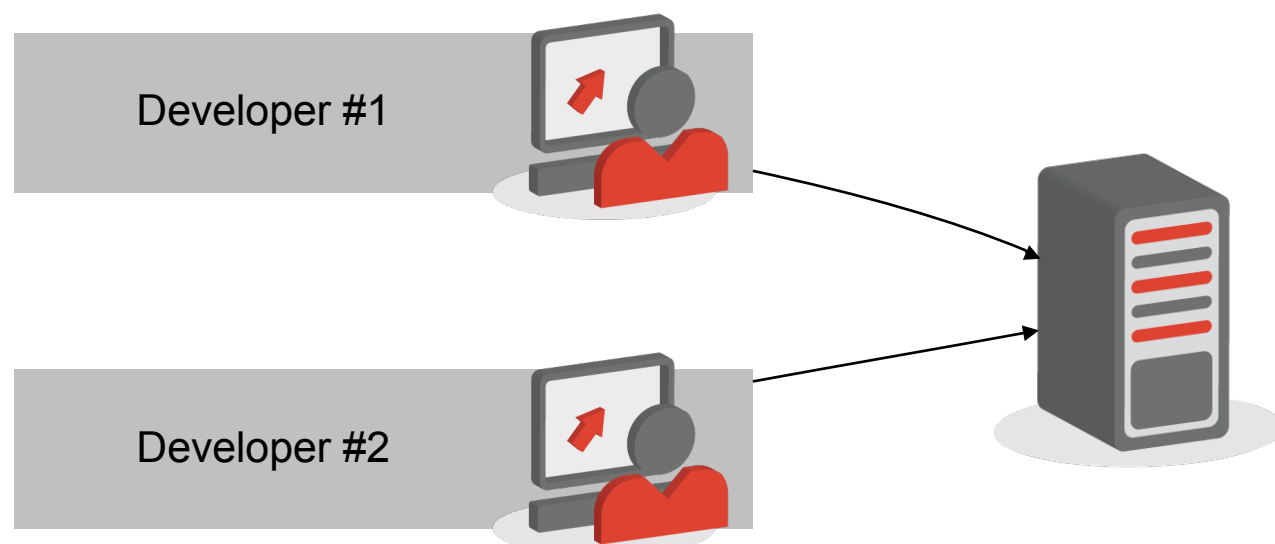
1. Online edit

2. MUD

3. Source control + MDS XML RPD

4. Source control + Binary RPD

- Zero setup required
- RPD updated automatically - no redeployment or restarts needed
- Concurrent development limited by high level locks taken when objects checked out
- Everyone's favourite error : "Transactional update failed"



Online RPD edits

1. Online edit

2. MUD

3. Source control + MDS XML RPD

4. Source control + Binary RPD

- No audit of changes made
- **No native integration with source control**
 - No tagging or packaging for releases
 - No rollback of changes / restore to point in time
- Conclusion :
 - ▶ Good for *individual developers* in isolation making sandbox changes
 - ▶ Useless anywhere else in the development cycle process

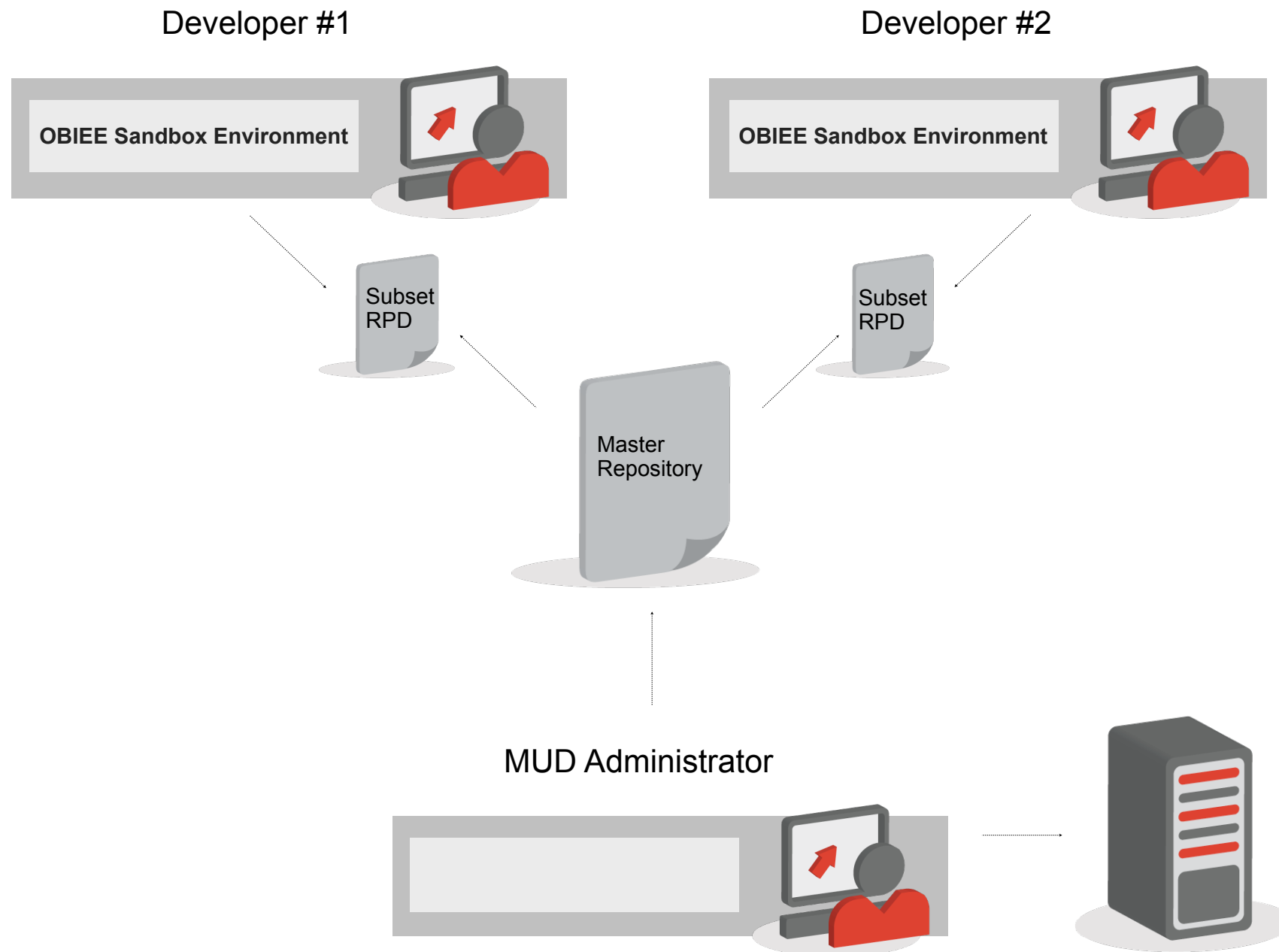
Multi User Development Environment (MUD)

1. Online edit

2. MUD

3. Source control + MDS XML RPD

4. Source control + Binary RPD



- Administrator divides main repository into projects; self-contained RPD subsets
- Master repository is then published to a network share
- Projects are worked on independently, and then merged back into the master RPD
- Uses the repository compare and merge features under the covers



Multi User Development Environment (MUD)

1. Online edit

2. MUD

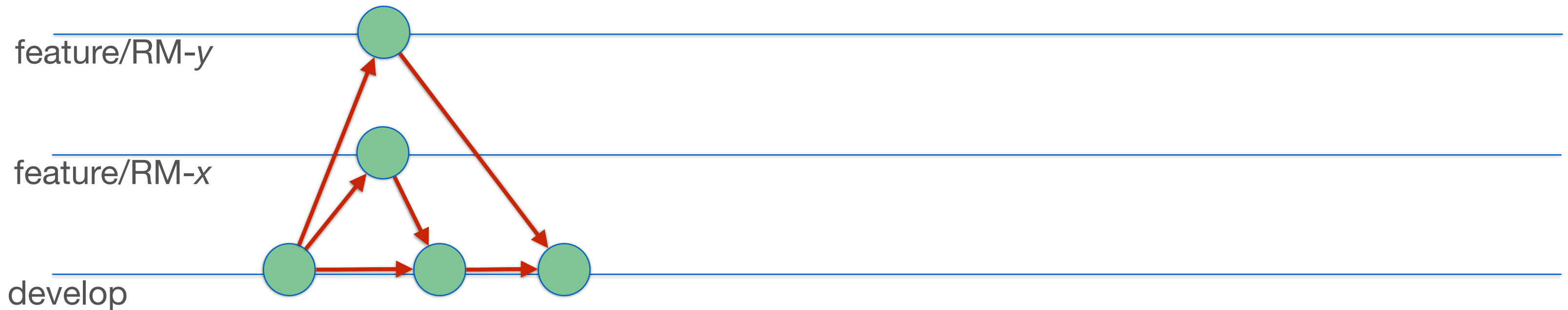
3. Source control + MDS XML RPD

4. Source control + Binary RPD

- Closest thing there is to native concurrent development functionality in OBIEE
- Onus and power for conflict resolution is with the developer, not source master
- Known bugs (eg Variables, parent-child tables)
- Doesn't easily support feature-driven development
- **No native integration with source control**
 - No tagging or packaging for releases
 - No rollback of changes / restore to point in time

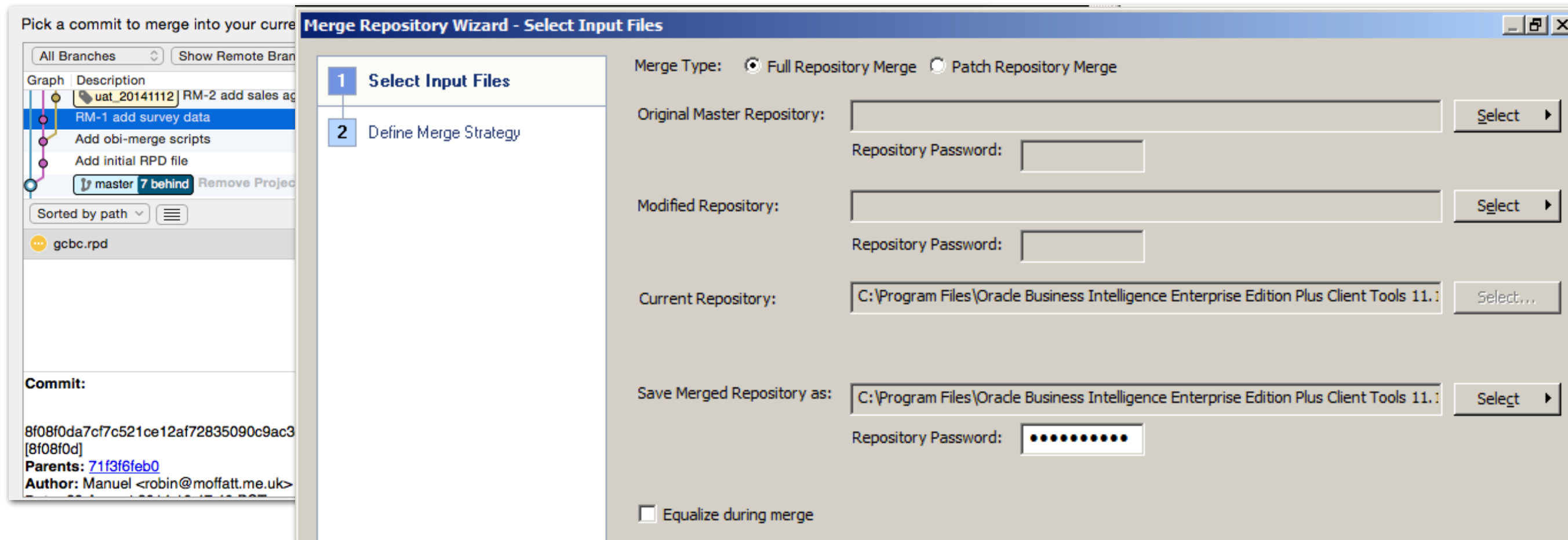
We've Got To Have Source Control!

- Any project should always be using **source control**
 - To do properly flexible concurrent development, we need to take a **feature-driven** approach
- ➔ Thus we use **branch based source control**
- **But - this requires the ability to *merge* files within the source control tool from multiple branches into one**



Source Control Merging

- When branches are combined in source control, the tool will automagically merge files and folders
- **Source control tools can only automatically merge files that are not binary...**



Is MDS XML the answer?



- The RPD is broken up into a hierarchical set of XML files representing object types such as Logical Tables, Logical Table Sources, etc
- Because there are multiple plain text files, can the source control tool can carry out the merge itself?

```
<?xml version="1.0" encoding="UTF-8" ?>
<LogicalComplexJoin mdsid="m637d53ce-0cbd-1000-9eed-c0a8f8880000"
  name="Sales:Relationship_2004:9581293467713"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="http://www.oracle.com/obis/repository"
  type="Inner" logicalTable1Ref="/oracle/bi/server/base/LogicalTable/637d538e-0cbd-1000-9eed-c0a8f8880000.xml#m637d538e-0cbd-1000-9eed-c0a8f8880000"
  multiplicity1="0..1"
  isAggregate1="false"
  logicalTable2Ref="/oracle/bi/server/base/LogicalTable/637d5376-0cbd-1000-9eed-c0a8f8880000.xml#m637d5376-0cbd-1000-9eed-c0a8f8880000"
  multiplicity2="0..n" isAggregate2="false">
</LogicalComplexJoin>
```

```
total 112
drwxr-xr-x 3 robin staff 102 29 Aug 10:51 BusinessModel
drwxr-xr-x 4 robin staff 136 29 Aug 10:51 ConnectionPool
drwxr-xr-x 3 robin staff 102 29 Aug 10:51 Database
drwxr-xr-x 7 robin staff 238 29 Aug 10:51 Dimension
drwxr-xr-x 6 robin staff 204 29 Aug 10:51 Group
drwxr-xr-x 45 robin staff 1530 29 Aug 10:51 InitBlock
drwxr-xr-x 9 robin staff 306 7 Jan 09:59 LogicalComplexJoin
drwxr-xr-x 9 robin staff 306 29 Aug 10:51 LogicalTable
drwxr-xr-x 17 robin staff 578 29 Aug 10:51 LogicalTableSource
drwxr-xr-x 39 robin staff 1326 29 Aug 10:51 PhysicalTable
drwxr-xr-x 4 robin staff 136 29 Aug 10:51 PresentationCatalog
drwxr-xr-x 11 robin staff 374 29 Aug 10:51 PresentationHierarchy
drwxr-xr-x 11 robin staff 374 29 Aug 10:51 PresentationTable
drwxr-xr-x 5 robin staff 170 29 Aug 10:51 PrivilegePackage
drwxr-xr-x 3 robin staff 102 29 Aug 10:51 QueryObject
drwxr-xr-x 7 robin staff 238 29 Aug 10:51 Schema
drwxr-xr-x 3 robin staff 102 29 Aug 10:51 User
drwxr-xr-x 57 robin staff 1938 29 Aug 10:51 Variable
robin@RNMBP ~/git/gcbc/RPD/oracle/bi/server/base $ cd LogicalTable
robin@RNMBP ~/git/gcbc/RPD/oracle/bi/server/base/LogicalTable $ ll
total 112
-rw-r--r-- 1 robin staff 8108 29 Aug 10:51 637d5376-0cbd-1000-9eed-c0a8f8880000.xml
-rw-r--r-- 1 robin staff 8408 29 Aug 10:51 637d537c-0cbd-1000-9eed-c0a8f8880000.xml
-rw-r--r-- 1 robin staff 6617 29 Aug 10:51 637d5386-0cbd-1000-9eed-c0a8f8880000.xml
-rw-r--r-- 1 robin staff 7070 29 Aug 10:51 637d538e-0cbd-1000-9eed-c0a8f8880000.xml
-rw-r--r-- 1 robin staff 5965 29 Aug 10:51 637d5395-0cbd-1000-9eed-c0a8f8880000.xml
-rw-r--r-- 1 robin staff 2555 29 Aug 10:51 637d539c-0cbd-1000-9eed-c0a8f8880000.xml
-rw-r--r-- 1 robin staff 6888 29 Aug 10:51 637d539f-0cbd-1000-9eed-c0a8f8880000.xml
robin@RNMBP ~/git/gcbc/RPD/oracle/bi/server/base/LogicalTable $
```


Source control + MDS XML RPD

1. Online edit

2. MUD

3. Source control + MDS XML RPD

4. Source control + Binary RPD

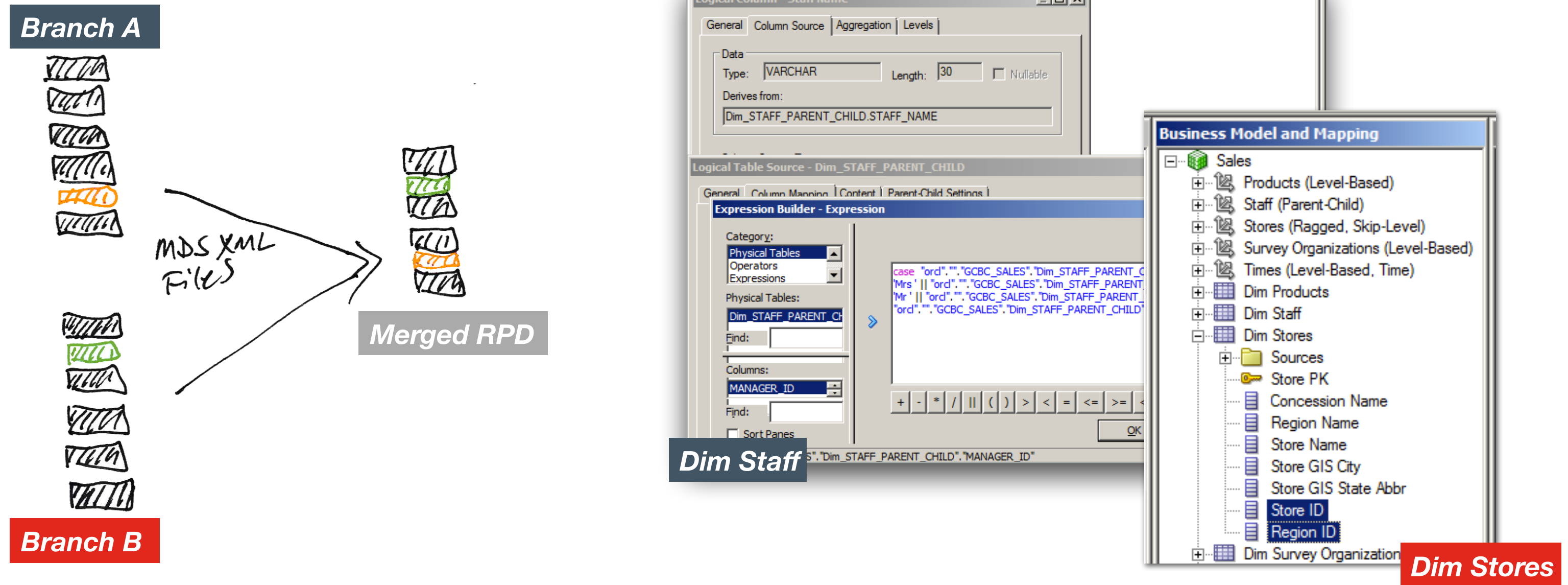
- Package up all artefacts in Source Control, providing release and rollback capabilities
- Store the RPD in MDS XML, a plaintext alternative to the binary RPD format
- Deceptively alluring option for concurrent development:
 1. An RPD stored in MDS XML is plain text
 2. git can merge code that is plain text from multiple branches
 3. *Let's merge MDS XML with git!*
 4. Uh oh....



Source control + MDS XML RPD - the good

1. Online edit
2. MUD
- 3. Source control + MDS XML RPD**
4. Source control + Binary RPD

► It works in simple and specific use-cases



Source control + MDS XML RPD

1. Online edit
2. MUD
3. Source control + MDS XML RPD
4. Source control + Binary RPD

► Separate commits in git

Commit: 049994d5ca004715e3ef4b844990b3f996859f3c [049994d]
Parents: 4b40b21597
Author: basil0 <robin@moffatt.me>
Date: 15 August 2014 13:59:33

Change expression for STAFF_NAME, to add Mr/Mrs prefix

Context: 3 Lines ☐ Ignore Whitespace External Diff

RPD/oracle/bi/server/base/LogicalTable/637d5395-0cbd-1000-9eed-c0a8f8880000.xml
Modified file, 3 lines added, 2 lines removed Reverse File

Hunk 1: Lines 58-67 (previously 58-66)

```
58 58 <LogicalColumn mdsid="m637d539b-0cbd-1000-9eed-c0a8f8880000" name="Staff Name" isWriteable="false">
59 59 <AttrDefn mdsid="m637d5444-0cbd-1000-9eed-c0a8f8880000" name="AD_3900:2677191400755751">
60 60 <Expr mdsid="m00000006-01f4-0000-1dd4-9ee900000000" name="Expr">
61 - <ExprText><![CDATA["%1"]]></ExprText>
62 - <ExprTextDesc><![CDATA["orcl"."GCBC_SALES"."Dim_STAFF_PARENT_CHILD"."STAFF_NAME"]]></ExprTextDesc>
61 + <ExprText><![CDATA[case "%1" when 'M' then 'Mr ' || "%2" when 'F' then 'Mrs ' || "%2" else "%2" end]]></ExprText>
62 + <ExprTextDesc><![CDATA[case "orcl"."GCBC_SALES"."Dim_STAFF_PARENT_CHILD"."STAFF_GENDER" when 'M' then 'Mr ' || "orcl"
63 63 <ObjectRefList>
```

Commit: 1cd8f31a8ad31128dc978d449c8d74d3d6941cb1 [1cd8f31]
Parents: 4b40b21597
Author: Manuel <robin@moffatt.me.uk>
Date: 15 August 2014 14:03:28
Labels: HEAD

Add ID columns to Dim Stores

Context: 3 Lines ☐ Ignore Whitespace

```
67 67 </AttrDefn>
68 68 </LogicalColumn>
69 + <LogicalColumn mdsid="mc0000002-804b-14fb-806e-0a0a0a0a0000" name="Store ID" isWriteable="false">
70 + <AttrDefn mdsid="mc0000003-804b-14fb-806e-0a0a0a0a0000" name="AD_3900:7251408106799">
71 + <Expr mdsid="m00000007-01f4-0000-7259-455e00000000" name="Expr">
72 + <ExprText><![CDATA["%1"]]></ExprText>
73 + <ExprTextDesc><![CDATA["orcl"."GCBC_SALES"."Dim_STORES_RAGGED"."STORE_ID"]]></ExprTextDesc>
74 + <ObjectRefList>
75 + <RefObject refId="m00000007-01f4-0000-7259-455e00000000-m637cde4a-0cbd-1000-9eed-c0a8f8880000" objectType
76 + </ObjectRefList>
77 + </Expr>
78 + </AttrDefn>
79 + </LogicalColumn>
80 + <LogicalColumn mdsid="m00000002-804d-14fb-806e-0a0a0a0a0000" name="Region ID" isWriteable="false">
81 + <AttrDefn mdsid="m00000003-804d-14fb-806e-0a0a0a0a0000" name="AD_3900:7291408106804">
82 + <Expr mdsid="m00000008-01f4-0000-7522-e28300000000" name="Expr">
83 + <ExprText><![CDATA["%1"]]></ExprText>
84 + <ExprTextDesc><![CDATA["orcl"."GCBC_SALES"."Dim_STORES_RAGGED"."REGION_ID"]]></ExprTextDesc>
85 + <ObjectRefList>
86 + <RefObject refId="m00000008-01f4-0000-7522-e28300000000-m637cde48-0cbd-1000-9eed-c0a8f8880000" objectType
87 + </ObjectRefList>
88 + </Expr>
89 + </AttrDefn>
90 + </LogicalColumn>
69 91 <LogicalKey mdsid="m637d5421-0cbd-1000-9eed-c0a8f8880000" name="Dim_STORES_RAGGED_PK" isPrimary="true">
```

Filename	Path
637d5395-0cbd-1000-9eed-c0a8f8880000.xi	RPD\oracle\bi\server
637d5456-0cbd-1000-9eed-c0a8f8880000.xi	RPD\oracle\bi\server
ff7853da-0cc0-1000-b702-c0a8f8a40000.xml	RPD\oracle\bi\server
ff7853db-0cc0-1000-b702-c0a8f8a40000.xml	RPD\oracle\bi\server

Filename	Path
637d538e-0cbd-1000-9eed-c0a8f8880000.xi	RPD\oracle\bi\server\base\LogicalTable
637d5454-0cbd-1000-9eed-c0a8f8880000.xi	RPD\oracle\bi\server\base\LogicalTableSource
ff7853da-0cc0-1000-b702-c0a8f8a40000.xml	RPD\oracle\bi\server\base\ObjectPrivilege
ff7853db-0cc0-1000-b702-c0a8f8a40000.xml	RPD\oracle\bi\server\base\ObjectPrivilege

Source control + MDS XML RPD

1. Online edit
2. MUD
- 3. Source control + MDS XML RPD**
4. Source control + Binary RPD

► Happily merged!

The screenshot displays the Oracle BI Administration Tool interface. The top pane shows a commit history with the following entries:

- Remove projects from RPD
- Merge branch 'develop' of https://github.com/RittmanMead/gcbc into develop
- Change expression for STAFF_NAME, to add Mr/Mrs prefix
- HEAD Add ID columns to Dim Stores**
- Revert "Remove GIS columns from Dim Stores and associated table from LTS"
- Remove GIS columns from Dim Stores and associated table from LTS
- Initial commit of GCBC repository in MDS XML format
- Initial commit

The middle pane displays the diff for the selected commit, showing changes between 4b40b21597e20d931054766ba4d18ae27ec8b152 and 3d673f2039b6326e103414a58ccd536ee4819ae1. The bottom pane shows a list of files with their paths:

Filename	Path
637d538e-0cbd-1000-9eed-c0a8f8880000.xml	RPD\prade\bi\server\base\LogicalTable
637d5395-0cbd-1000-9eed-c0a8f8880000.xml	RPD\prade\bi\server\base\LogicalTable
637d5454-0cbd-1000-9eed-c0a8f8880000.xml	RPD\prade\bi\server\base\LogicalTableSource
637d5456-0cbd-1000-9eed-c0a8f8880000.xml	RPD\prade\bi\server\base\LogicalTableSource
ff7853da-0cc0-1000-b702-c0a8f8a40000.xml	RPD\prade\bi\server\base\ObjectPrivilege
ff7853db-0cc0-1000-b702-c0a8f8a40000.xml	RPD\prade\bi\server\base\ObjectPrivilege

Handwritten notes on the left indicate "MDS XML Files" and "Dim Stores" (pointing to the LogicalTable files) and "Dim Staff" (pointing to the LogicalTableSource files).

The right pane shows the "Expression Builder - Expression" dialog, displaying a complex SQL expression for the "STAFF_NAME" column:

```
case "ord", "", "GCBC_SALES", "Dim_STAFF_PARENT_CHILD", "STAFF_GENDER" when 'M' then  
  'Mr' || "ord", "", "GCBC_SALES", "Dim_STAFF_PARENT_CHILD", "STAFF_NAME" when 'F' then  
  'Mrs' || "ord", "", "GCBC_SALES", "Dim_STAFF_PARENT_CHILD", "STAFF_NAME" else  
  "ord", "", "GCBC_SALES", "Dim_STAFF_PARENT_CHILD", "STAFF_NAME" end
```

The bottom right pane shows a tree view of the logical table source structure, including "Store Name", "Store GIS City", "Store GIS State Abbr", "Store ID", "Region ID", "Dim Survey Organizations", "Dim Times", and "Fact Sales".

Source control + MDS XML RPD - the bad

1. Online edit

2. MUD

3. Source control + MDS XML RPD

4. Source control + Binary RPD

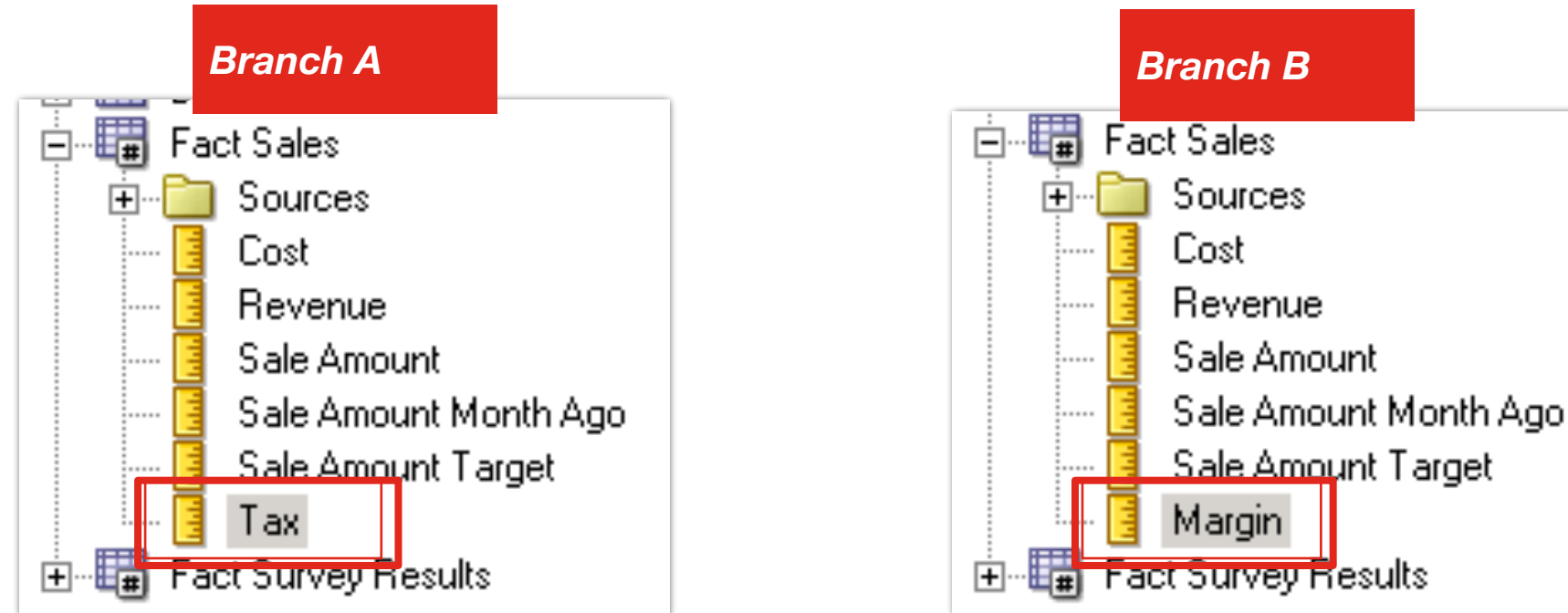
- Even though MDS XML is not binary, it is still a **structured** file format containing with **application logic**
 - ▶ Only the Administration Tool understands the RPD object model
- Source control tools are not intelligent enough to be able to **parse** it to understand conflicts

```
<?xml version="1.0" encoding="UTF-8" ?>  
<LogicalTable mdsid="m637d5376-0cbd-1000-9eed-c0a8f8880000" name="Fact Sales" xmlns:xsi="http://www.w3.org/2003/01/XMLSchema-instance" xsi:schemaLocation="http://www.w3.org/2003/01/XMLSchema-instance http://www.w3.org/2003/01/XMLSchema-instance">  
  ...<LogicalColumn mdsid="m637d5377-0cbd-1000-9eed-c0a8f8880000" name="Cost" isWriteable="false">  
    ...<MeasureDefn mdsid="m637d53ab-0cbd-1000-9eed-c0a8f8880000" name="Measure" isCommutative="false">  
      ...<AttrDefn mdsid="m637d5424-0cbd-1000-9eed-c0a8f8880000" name="AD_3900:2676871400755751">  
    ...</LogicalColumn>  
  ...<LogicalColumn mdsid="m637d5378-0cbd-1000-9eed-c0a8f8880000" name="Revenue" isWriteable="false">  
    ...<MeasureDefn mdsid="m637d53ac-0cbd-1000-9eed-c0a8f8880000" name="Measure" isCommutative="false">  
      ...<AttrDefn mdsid="m637d5425-0cbd-1000-9eed-c0a8f8880000" name="AD_3900:2676881400755751">  
    ...</LogicalColumn>  
  ...<LogicalColumn mdsid="m637d5379-0cbd-1000-9eed-c0a8f8880000" name="Sale Amount" isWriteable="false">  
    ...<MeasureDefn mdsid="m637d53ad-0cbd-1000-9eed-c0a8f8880000" name="Measure" isCommutative="false">  
      ...<AttrDefn mdsid="m637d5426-0cbd-1000-9eed-c0a8f8880000" name="AD_3900:2676891400755751">  
    ...</LogicalColumn>
```

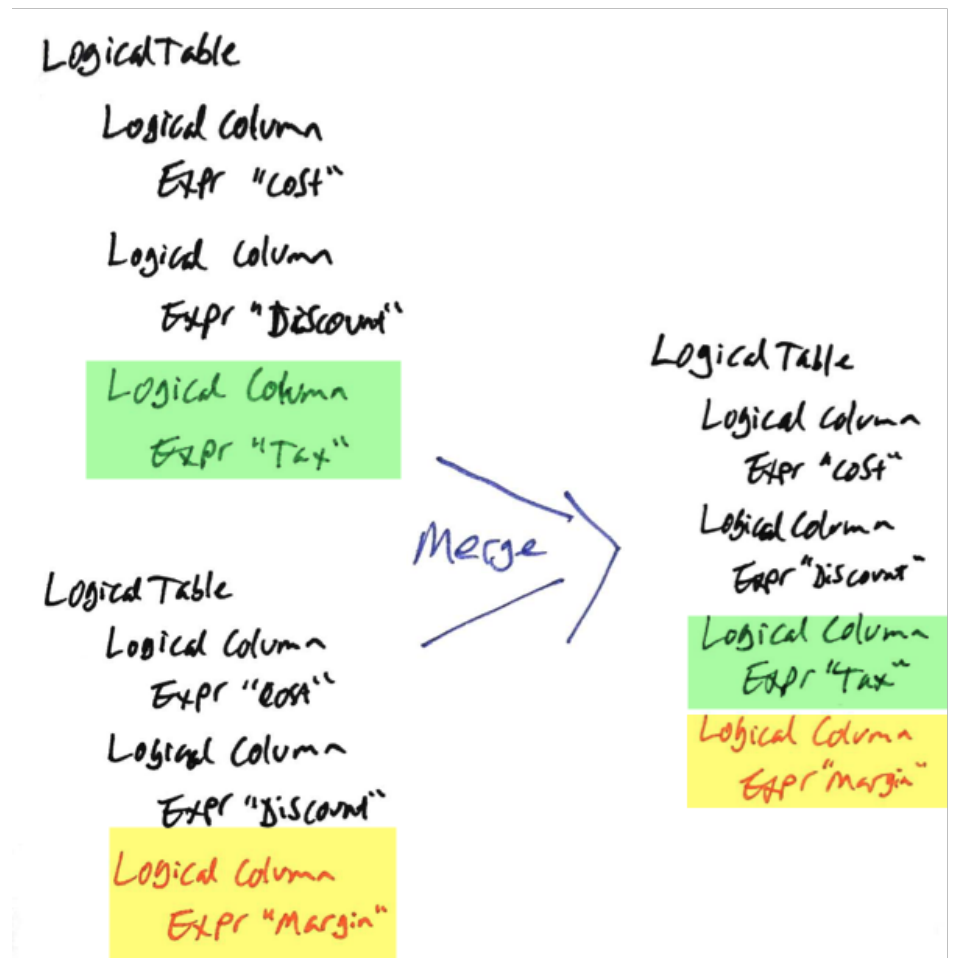
Source control + MDS XML RPD - the bad

1. Online edit
2. MUD
3. Source control + MDS XML RPD
4. Source control + Binary RPD

- Let's add new columns to same table in separate branches

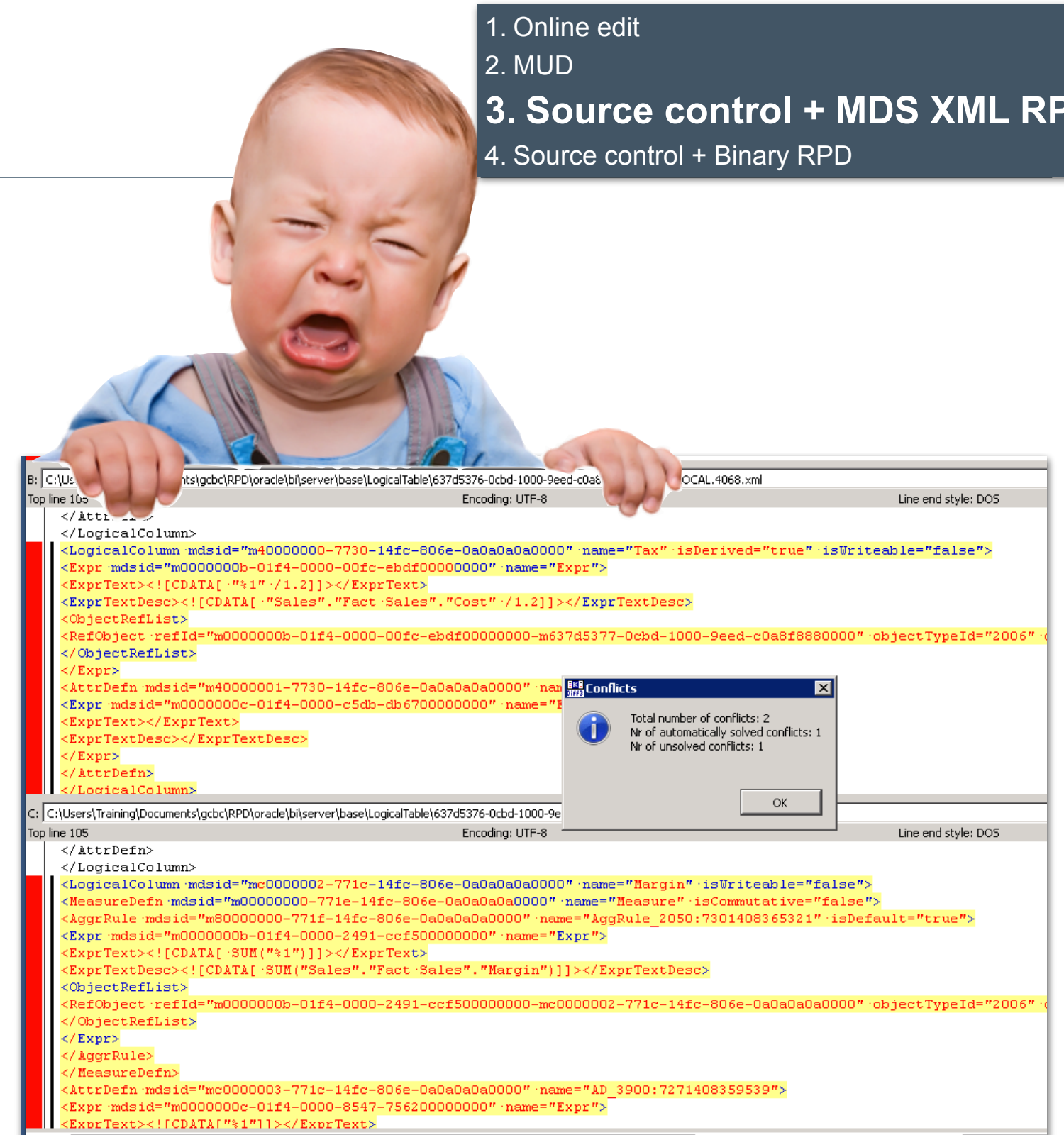
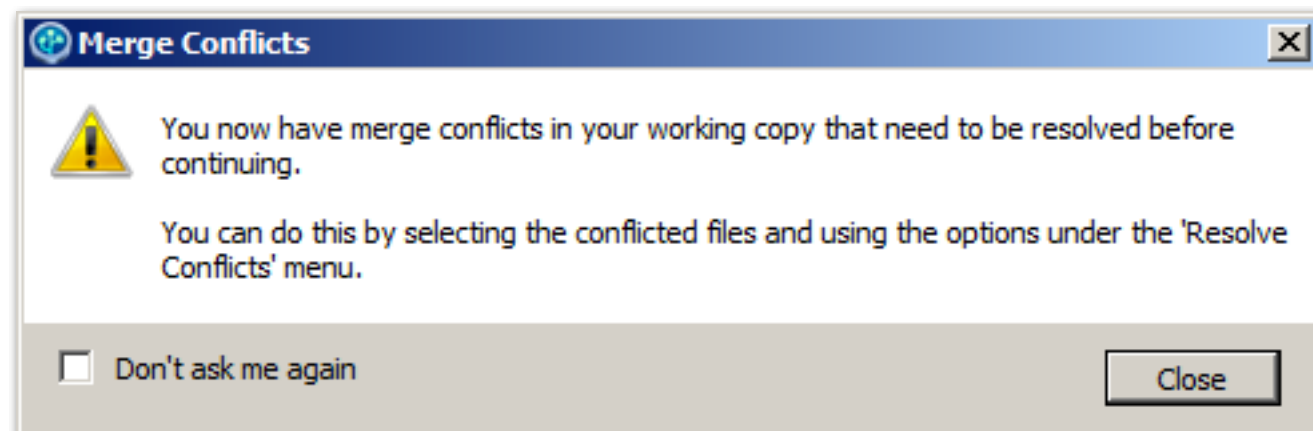


- Should be simple - there's no *logical* conflict



Source control + MDS XML RPD

- ▶ Source control tool looks at the two versions of MDS XML file as dumb plaintext, and throws a conflict
- ▶ User now has to manually fix the XML, which is tricky and error prone
 - ▶ It's also unnecessary - merging through the Administration Tool would be automatic

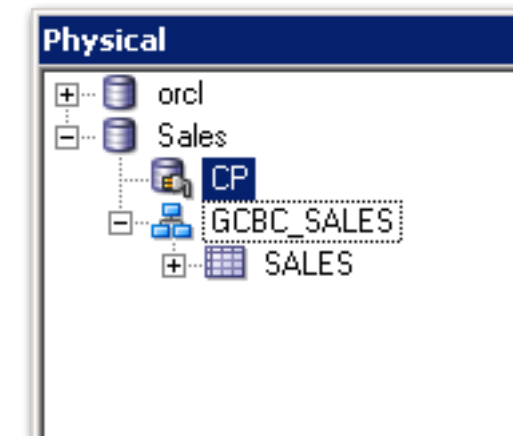
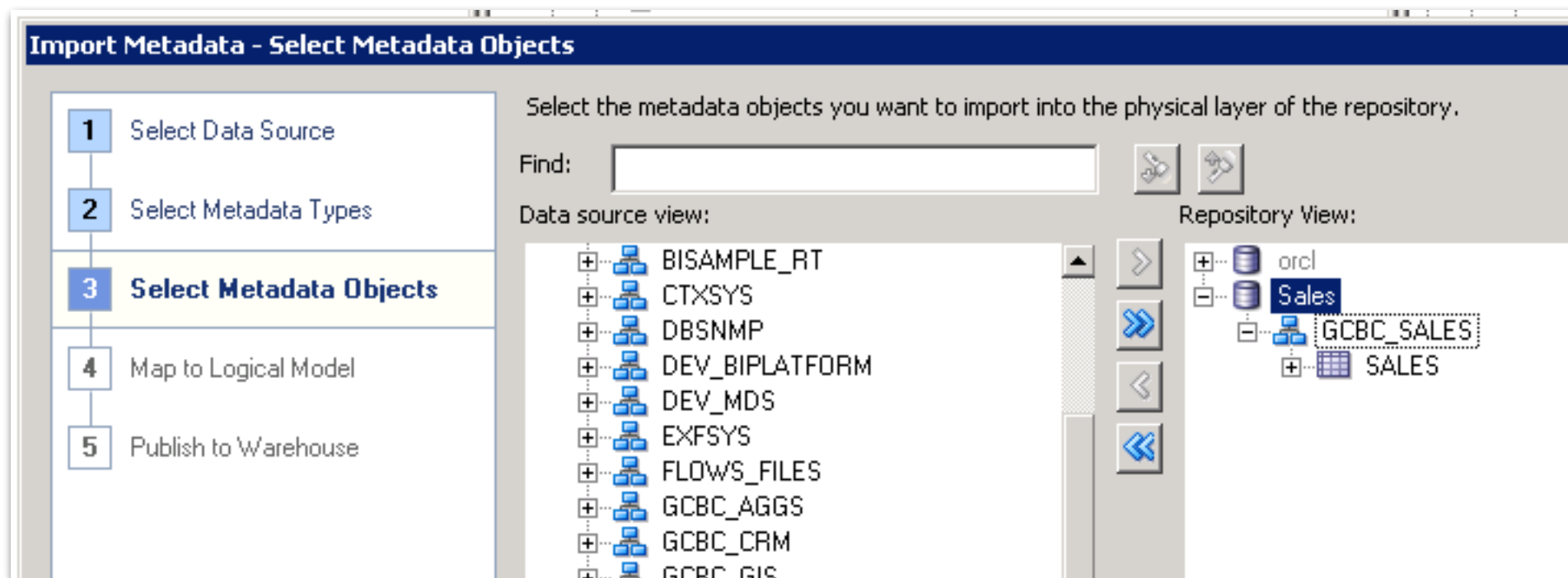


1. Online edit
2. MUD
3. Source control + MDS XML RPD
4. Source control + Binary RPD

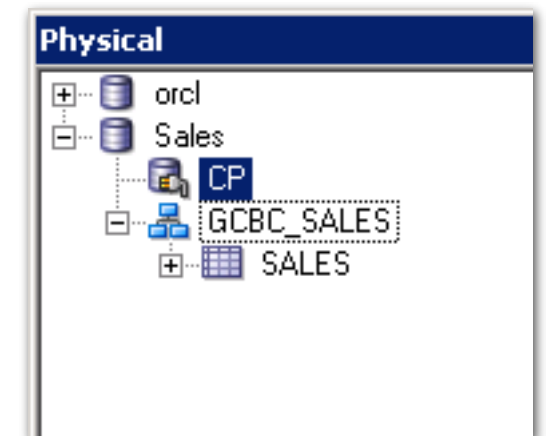
Source control + MDS XML RPD - the ugly

1. Online edit
2. MUD
3. Source control + MDS XML RPD
4. Source control + Binary RPD

- ▶ MDS XML files are named based on **internal GUIDs** (mdsid)
- ▶ **Same logical object** can have **different mdsid**, and so source control sees it as unique
- ▶ Allowing source control tool to merge files can create a corrupt RPD
- ▶ For example, an identical object created in multiple branches



Branch A



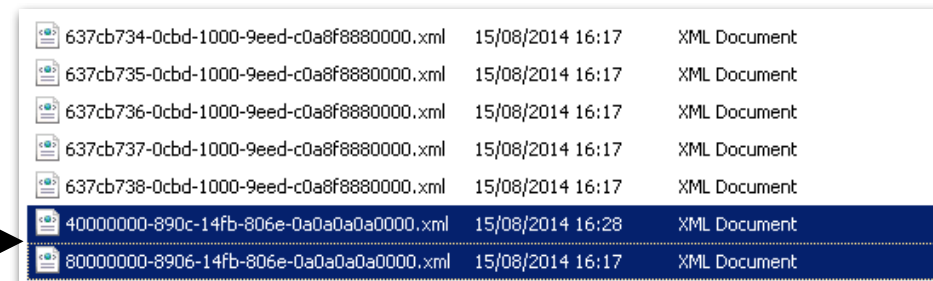
Branch B

Source control + MDS XML RPD - the ugly

1. Online edit
2. MUD
3. Source control + MDS XML RPD
4. Source control + Binary RPD

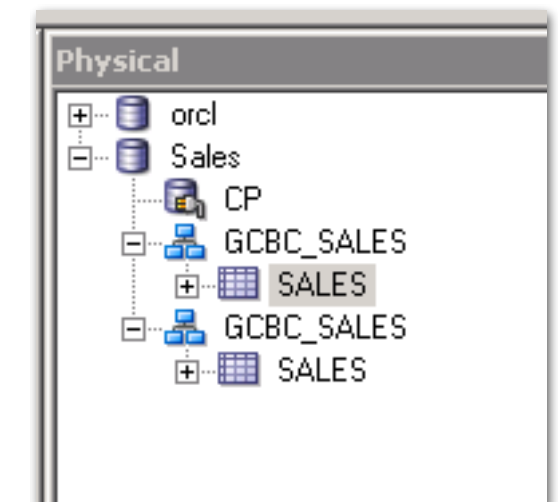
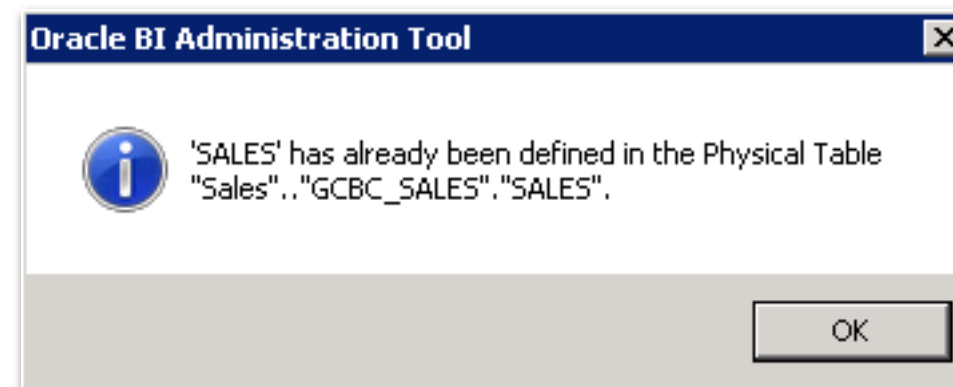
- ▶ Same object gets a different *mdsid*, thus a different filename and so gets **duplicated** in the resulting merge, because **source control doesn't see it as the same object**

The same object definition!



637cb734-0cbd-1000-9eed-c0a8f8880000.xml	15/08/2014 16:17	XML Document
637cb735-0cbd-1000-9eed-c0a8f8880000.xml	15/08/2014 16:17	XML Document
637cb736-0cbd-1000-9eed-c0a8f8880000.xml	15/08/2014 16:17	XML Document
637cb737-0cbd-1000-9eed-c0a8f8880000.xml	15/08/2014 16:17	XML Document
637cb738-0cbd-1000-9eed-c0a8f8880000.xml	15/08/2014 16:17	XML Document
40000000-890c-14fb-806e-0a0a0a0000.xml	15/08/2014 16:28	XML Document
80000000-8906-14fb-806e-0a0a0a0000.xml	15/08/2014 16:17	XML Document

- ▶ Result: dodgy RPD, user cannot edit the SALES table.



- ▶ Exactly what the Equalize function was designed for in the AdminTool merge!

Source control + MDS XML RPD - Summary

1. Online edit

2. MUD

3. Source control + MDS XML RPD

4. Source control + Binary RPD

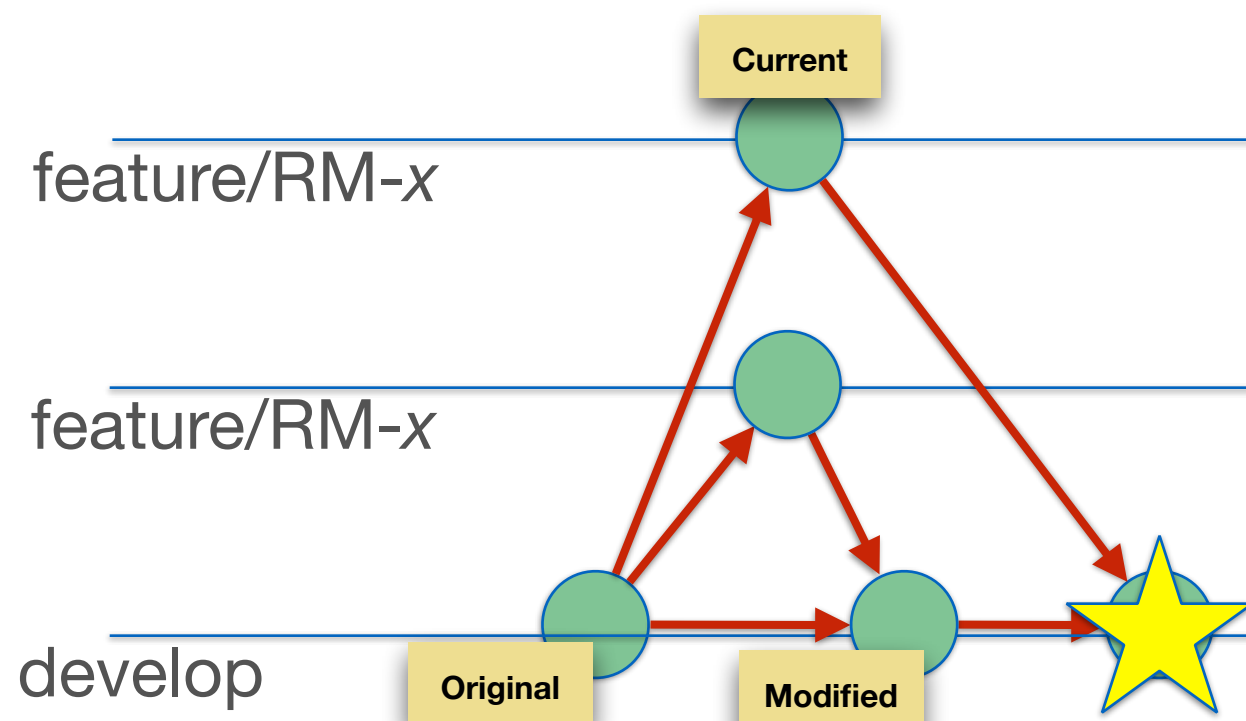
- You cannot reliably merge the RPD except through Oracle's own tools
 - ▶ MDS XML, whilst plaintext, is still **structured**
 - Unnecessary conflicts when merging
 - Potential inconsistencies / corruption
 - ▶ MDS XML uses GUIDs to name files, so source control may inadvertently **duplicate objects without notification**
 - RPD problems may not always be immediately apparent
- MDS XML merging may work for simple isolated changes to individual objects; as a development strategy this is restrictive.



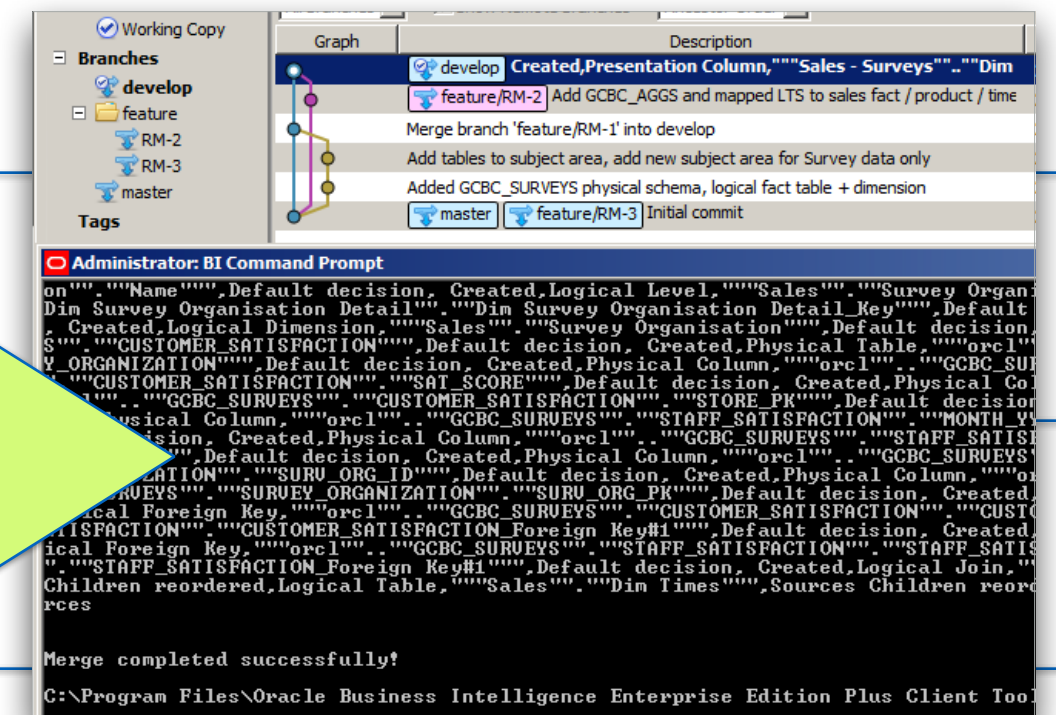
Source control + Binary RPD

1. Online edit
2. MUD
3. Source control + MDS XML RPD
4. **Source control + Binary RPD**

- Package up all artefacts in Source Control, providing release and rollback capabilities
- Use the common **git-flow** branching method, with development divided up into **features**
 - ▶ Provides clear structure and process for managing branches and releases
- ▶ RPD stored as binary. **Three-way merge with OBIEE tools** done where necessary.



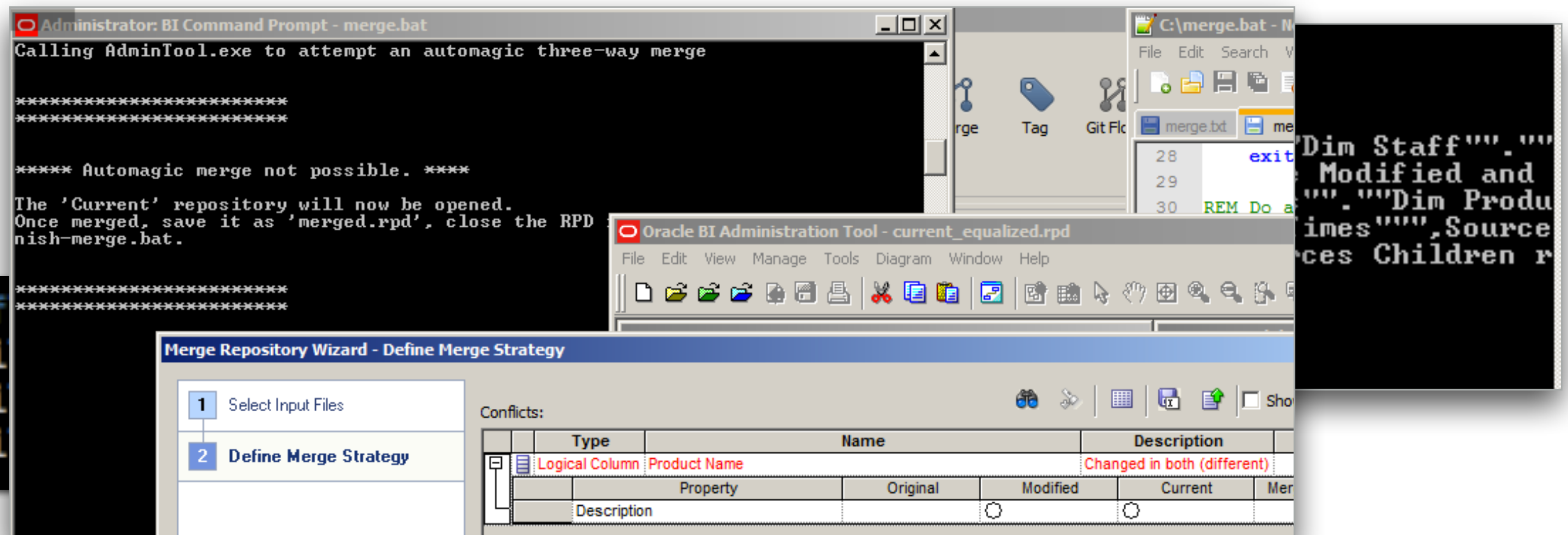
‘Secret Sauce’ :
merge.bat script



Source control + Binary RPD

1. Online edit
2. MUD
3. Source control + MDS XML RPD
- 4. Source control + Binary RPD**

- Conflict resolution script:
 - ▶ Uses git-flow to determine 3-way merge candidates
 - ▶ Attempts automatic merge (comparerpd/patchrpd)
 - ▶ Launches Administration Tool for user interaction if necessary



So which methods sucks the least?

	Multiple developers	Integration with source control	Feature driven development	Ease of use	Overall
Source control + Binary RPD	Yes	Yes	Yes	Medium	Not perfect, but the best option
MUD	Yes	Manual	No	Medium	Could be worse
Source control + MDS XML	Yes	Yes	Only if objects fully isolated	Medium	Requires too much process to mitigate against RPD corruption and unnecessary merge conflicts
Online editing	Not really	No	No	Easy	Not viable

The Harsh Reality

- OBIEE does not natively support concurrent development integrated with source control
 - ▶ *And it never will until Oracle re-engineer OBIEE and/or the RPD storage format*
- All options require a **defined process to be followed** and associated **training** for staff
 - There is no perfect software-based solution that will **force ‘bad’ developers to be good**
- You will always need a “**Dungeon Master**” to oversee and track developments, manage conflicts, and support developers.



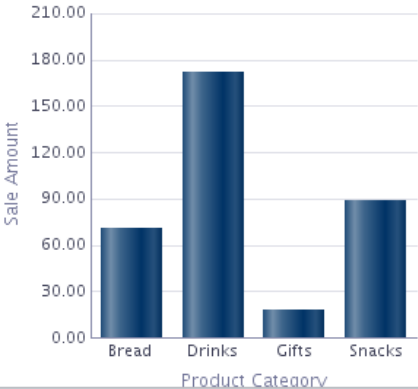
Checking It All Still Works

- For concurrent development to be successful, you need **automated testing**

Before

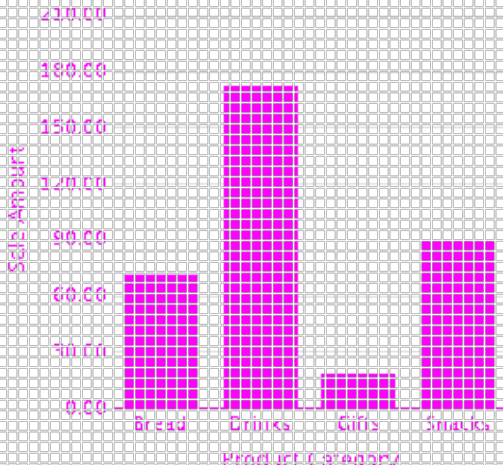
Company Overview

[Click Here to view Performance Breakdown](#)
[Click here to review the Cost Breakdown Report](#)



Company Overview

[Click Here to view Performance Breakdown](#)
[Click here to review the Cost Breakdown Report](#)



After

Company Overview

[Click Here to view Performance Breakdown](#)
[Click here to review the Cost Breakdown Report](#)

Company Overview

[Click Here to view Performance Breakdown](#)
[Click here to review the Cost Breakdown Report](#)

```
failed. Please examine the following error:
al_formatting

[oracle@rpm-elf-2 rt]$ cat failures/
Bread
Drinks
Gifts
Snacks
DEC-2010 201012 -321.00 Down By
DEC-2010 201012 -310.00 Down By
Bread
Drinks
Gifts
Snacks
DEC-2010 201012 1986.30 Up By
DEC-2010 201012 1177.95 Up By
DEC-2010 201012 622.25 Up By
DEC-2010 201012 1169.80 Up By
```

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Summary

- If you're not doing source control, go and do it.
 - ▶ Now.
 - ▶ Even for serial development
 - ▶ Even if you're the only developer
- If you are doing source control, then you can use it to support concurrent development
 - ▶ *But don't go anywhere near concurrent development until you've sorted source control*
- The only way to do **safe and reliable concurrent development** is using the **binary RPD** stored in source control such as **git**



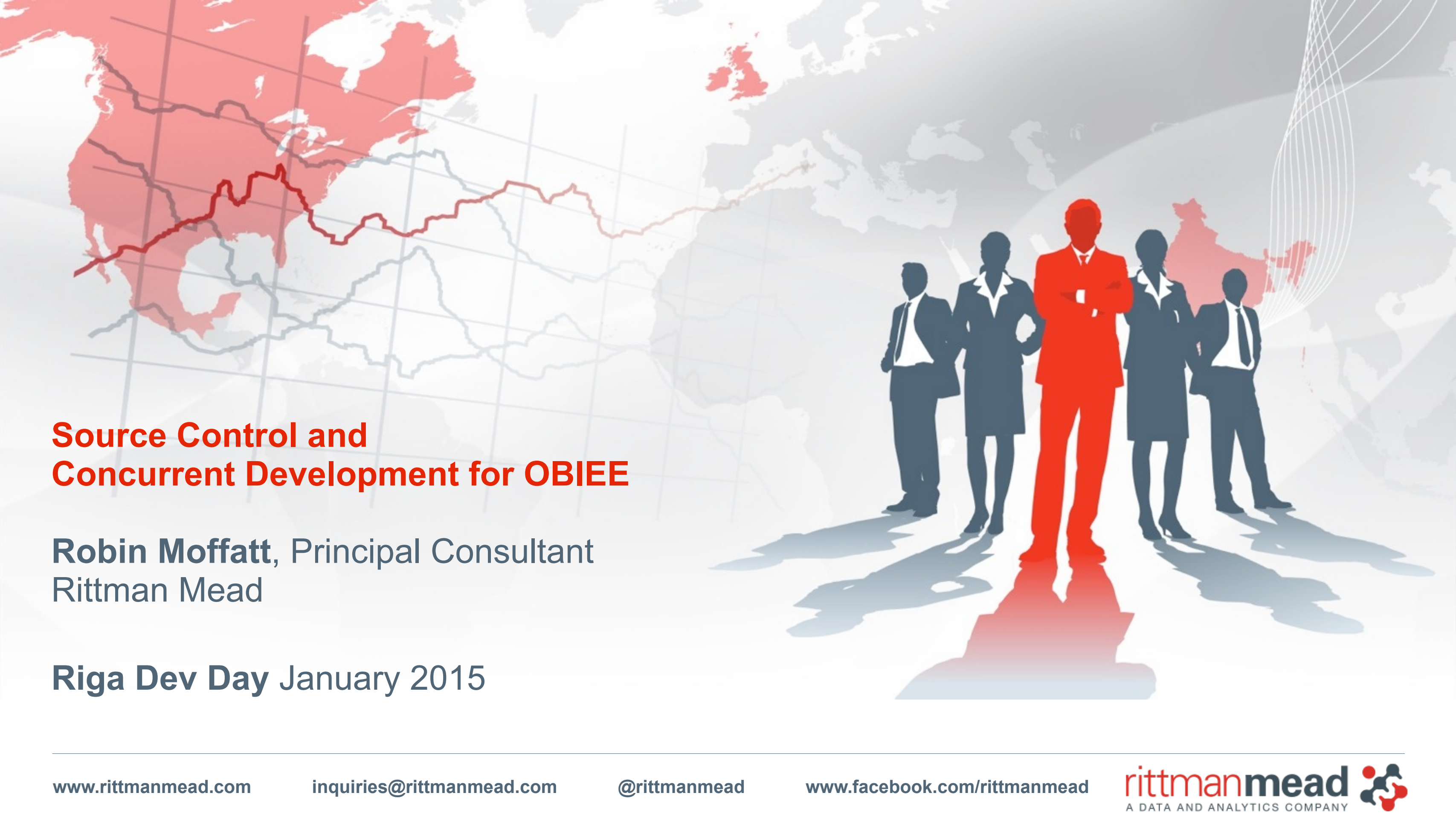
#EOF

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***twitter:** [@rmoff](https://twitter.com/rmoff)

***IRC:** rmoff / #obihackers / freenode



Source Control and Concurrent Development for OBIEE

Robin Moffatt, Principal Consultant
Rittman Mead

Riga Dev Day January 2015